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**Zhuspekova A.K.  
Maymurunova A.A.**
**USE OF GIS-TECHNOLOGIES IN KAZAKHSTAN AND ABROAD**

- 1) PhD in Economics, Associate Professor. Karaganda Economic University of Kazpotreboysyuz  
9 Akademicheskaya Str., Karaganda, 100009, Kazakhstan
- 2) Teacher, Master of Economics. Karaganda Economic University of Kazpotreboysyuz  
9 Akademicheskaya Str., Karaganda, 100009, Kazakhstan. E-mail: [akkma@mail.ru](mailto:akkma@mail.ru)

**Abstract.** This article discusses the use of GIS technology in abroad as well as in Kazakhstan. The article seeks to izuchitkazahstansky experience using geographic information system in tourism. The model of recreational GIS analyzes the possibility of using GIS technology in recreation and tourism.

**Keywords:** GIS-technology; cartography; project; information.

**Жуспекова А.К.  
Маймурунова А.А.**
**ИСПОЛЬЗОВАНИЕ ГИС-ТЕХНОЛОГИЙ В КАЗАХСТАНЕ  
И ЗА РУБЕЖОМ**

- 1) кандидат экономических наук, доцент, Карагандинский экономический университет Казпотребсоюза  
ул. Академическая, 9, г. Караганда, 100009, Казахстан
- 2) преподаватель, магистр экономики, Карагандинский экономический университет Казпотребсоюза  
ул. Академическая, 9, г. Караганда, 100009, Казахстан  
E-mail: [akkma@mail.ru](mailto:akkma@mail.ru)

**Аннотация.** В данной статье обсуждаются вопросы использования ГИС-технологий за рубежом, а также в Казахстане. В статье ставится задача изучить казахстанский опыт использования геоинформационной системы в сфере туризма. Рассматривается модель рекреационной ГИС, анализируются возможности применения ГИС-технологий в рекреации и туризме.

**Ключевые слова:** ГИС-технология, картография, проект, информация.

Currently the work on formation, promotion and realization of tourist product is impossible without appropriate information support. The tourism authorities and tourism companies in their work are constantly faced with the problems of development of information technologies, which are essential to international integration of tourism business as information-rich areas.

GIS enable rapid response to any emerging situation at any site with getting on it all necessary cartographic and thematic information. They are cantometrics study with simultaneous building of any maps, plans and diagrams. On the basis of GIS can simulate various processes, phenomena and study the change in their status over time [1].

GIS structure typically includes four essential subsystems:

- input of data, provides input and/or processing spatial data from different sources (maps, etc.);
- storage and retrieval, allowing operatively to obtain the data for analysis, to update and adjust them;

– processing and analysis, provide an opportunity to assess options, to solve computational and analytical tasks;

– submission (delivery) of data in different forms (maps, tables, block-diagrams, digital terrain models, etc.) [2].

The history of the development of geographic information systems starts since the late 50-ies of the last century. The main contribution to the development of GIS over the period of the 50's – 60's, made in the USA, Canada and Western Europe. Russia joined the global process of creation and development of geoinformation technologies in the mid 1980-ies [3]. Currently, GIS technologies have found wide application in marine navigation. For example, in Japan use of electronic navigational charts. On these maps, connected navigation devices, mark the location of the vessel, the rate at which the ship should follow, next to that ship other ships, ports and other information. Vehicles in the U.S. use electronic maps, in particular, upon detection of the moving means, the distribution of passenger transport on tourist routes, the congestion of the lines. This

information is often supported by the communication system [4].

One of the interesting examples of the use of GIS-technologies is a service GoogleEarth. It allows users to travel through an interactive map of the planet, created from the perfect connected space and ground images the detailed three-dimensional images of objects. On GoogleEarth interactive map the user can explore desired territory and to find the desired object, even with the help of the search box. Also the user can see the required area and using the function buttons to get directions.

With the help of this service you can view the territory at a given height and fly speed, as well as to measure the distance, work with GPS and create a map with overlay of the objects on the source map GoogleEarth. The developers of GIS technology in Austria are interested in learning and the processing of data about natural objects. For this they use the ARIS system. It will allow to map the required objects on various subjects. In India a system that will allow remotely to put the information on the card. In Scotland using the app to GGP Systems, developed on the basis of the GIS, users will learn more about the field of outdoor recreation [5].

Map of the city of Astana based on «Silverlight». This new technology of data representation in the Internet, designed to run on different platforms. It allows you to create rich, visually attractive web pages that work in most popular browsers, gadgets and desktop operating systems (including, AppleMacintosh). The key to the possibilities of Silverlight as the presentation WPF (WindowsPresentationFoundation) platform Microsoft.NET Framework 3,0 is XAML (eXtensible Application Markup Language, extensible markup language applications) [6]. When the first user opens the map, he can choose the language such as Kazakh, Russian or English, and one of the three view modes (map, diagram or hybrid). Map is divided into three districts and each of them has its own color, which improves perception and understanding, even when the user enlarges the map section. In control panel, click on the floor plan of the city of Astana, and the card will acquire its original position. More users of this card have the ability to look at a diagram of the entire public transport of Astana city. In tabular form arranged in order of route numbers, and when you click on a specific room, you can view the online route, direct route, return route, the entire route. When selecting a desired menu item on the map displays the color scheme of the route with stops and their names. In control panel you can select «Events» that take place in the city. These include concerts,

cultural events, theatres and shows, exhibitions, fairs, official and paid events. In addition, a big advantage of this card is the ability to view objects through a virtual tour. On the map in the form of a camera are icons, clicking on which opens the picture of the object and scheme with red points, when these points are pressed you can travel on this object. If the object has several floors, near the scheme, you can use the press to advance to the next floor. For the convenience of users in the lower right corner there is the Navigator, which shows user-selected segment of the city, but on a smaller scale. One of the interesting features is the menu item «Filter by neighborhood». On the map there is a circle encompassing 279 meters, when moving the circle left of the map there is information about what objects are in this area [7]. Analyzed card has a lot of interesting methods of obtaining information, and it is therefore very interesting to use.

Having examined the application of GIS technologies in foreign projects, we can say that they are an integral part of some of the major tourist and socio-cultural projects.

Currently find more and more application of GIS technology in tourism the design and operation of tourism resources and facilities in the tourism industry. Note that the Kazakhstan tourist business still not in a position to celebrate great achievements in this field. The development of world tourist market contributes to finding ways of effective development of tourism in Kazakhstan.

GIS can be of great help the tourism company, if you will create a GIS map with marked on it the resorts, the company cooperates with, plans of their territories, information about the quality of service, room photos, etc. All this creates a huge advantage over other sellers of similar tourist product.

A special role GIS played in the development of projects of perspective planning of development of tourism in some regions. In this regard, currently we are developing the tourist map of Almaty region, is used to obtain reference data on territorial features of the modern state of the recreational resources of the area. It is assumed that the map should provide a complete picture of the recreational resources of the Almaty region. Along with tourist map in a GIS it is possible to place a database of specialized digital maps describing recreation facilities:

- «Recreational and tourist facilities»;
- «Existing and prospective schemes of tourist routes»;
- «Scheme of railways and roads»;
- «Monuments of nature»;

– «Historical, cultural and architectural monuments»;

– «Product placement».

Tourist map of Almaty region must contain reference text information with illustrations. As the image (substrate) for the newly created map will be used maps political-administrative division of the Almaty region. To create a map of the material, i.e. creating the map, it will use the software package of the geoinformation system «MapInfo». In this paper, we elaborate on the creation of tourist maps objective analysis area. Almaty region is characterized by the presence of unique monuments of history and culture, rich historical heritage and has a favorable background for the development of different types of tourism and recreation, as area residents and visitors (Fig. 1).



Fig. 1. Schematic map of Ulytau

Рис. 1. Карта-схема Улытау

The region has considerable resources for the development of mountain tourism and mountaineering. Unique mountain ranges Zailiyskogo Alatau and Dzhungarskiy Alatau, and also the area of Khan-Tengri peak (7014 m) is the highest mountain in the country – the Central Tien-Shan. The mountains abound in picturesque lakes and waterfalls. The rivers Charyn, Koksus, Karatal, Or are attractive to sports and entertainment. The lakes Alakol, Balkhash, Kapshagai reservoir are favorite places for fans of boating, from fishing to travel under sail. In all districts of Almaty region develops sightseeing activities. Routes are selected on the basis of existing objects, accommodation and food. In the field of 118 developed tourist routes, including such kinds of tourism, such as cognitive, ecological,

ornithological, health and fitness, ethnographic and others. Tourist routes pass through such unique natural, historical, cultural, archaeological objects, as the canyon of Charyn river, Kolsay lake, Yasenevaya roshcha grove, «Poyushchiy burkhan», the waterfall «Burhan Bulak», the place of Anyrakay battle, Zhambyl's Museum, mosque of Zharkent, a town of artisans «Sheber aul». The use of maps proposed in the work of the tourism firms will significantly increase the number of tourists who will inspire them not only a detailed description of each object, but also its colorful photographs [8]. By studying the information provided in our well-decorated, with rich thematic content, user-friendly interface map, many potential tourists will want to see the beauty of our region, and therefore will want to visit Almaty oblast. Creation of tourist map of Almaty region will allow you to do spatial queries and to conduct analysis to identify suitable areas for required actions, to identify relationships between different parameters. Information on map of the resorts of Almaty region, their location, the quality of services, photos of rooms, beaches, names of original local cuisine and other information will give tourism firms that have access to this GIS, a significant advantage.

Despite this, and the projects based on GIS technology are developed in Russia at the moment. For example, in the framework of the national project «Menin Elim» by the end of the year will launch Internet portals «encyclopedia of Kazakhstan» and the National digital history. The developers promise that the projects will be unique, most informative, and will help to develop a sense of patriotism and love of country. By the way, on the portal «encyclopedia of Kazakhstan» will host a 3D tour of Kazakhstan, which, according to developers, will attract tourists into the country. This is a key event of the national project «Menin Elim» in the framework of implementation of «100 concrete steps.»

Today the working group on «Identity and unity» developed a plan of specific activities envisaged in the framework of the national project «Menin Elim». It is the creation of Internet portals «the encyclopedia of Kazakhstan» and the National digital history. This scientific-educational and technological projects. For example, the portal «encyclopedia of Kazakhstan» will host 3D tours. This virtual tours around Kazakhstan.

On the portal it is also possible to find information on Kazakhstan history and culture, interesting facts and everything to do with simple stories from the life of Kazakhs. The developers of the portal plan to place there and reference geographic data.



In essence, this portal will become a hallmark of our country which can go to any citizen of our country or a foreign tourist and learn about our country the most interesting information. This portal is developed in the format of a multi-level portal, co-authors of this encyclopedia have become the best specialists of leading scientific institutions, research organizations, universities of our country.

It will be located almost all the information that exists in Kazakhstan, including geography, and spiritual legacy, and the issues of development of Kazakhstan by sectors of economy and industrialization.

Apparently, the portal want to make as informative and interesting. Promise that the site you will see short videos on specific places, historical facts that, according to the developers, not enough interesting and popular today.

The goal of this project is to evoke a sense of patriotism, pride for our country, our citizens and our generation, knew the history of our country how rich and majestic. In addition, the development of foreign and domestic tourism, attracting foreigners, tourists to our country.

The project «National digital history» will be a common base for national history and literature of Kazakhstan. When its development was taken into account successful international experiences.

On this portal also will host exclusive content from leading domestic and foreign scholars on the history of Kazakhstan. In addition, there will be a new supply of this material, in order to immediately grab the attention of our users.

Another important project will be the «National Digital History» — Internet portal aims to keep the history information about the spiritual heritage and development of the country in the global web.

The creation of such Internet projects as «the encyclopedia of Kazakhstan» and «National Digital History» is meant not only to help each citizen to learn more about our state, but also to carry out promoting foreign and domestic tourism. By the way, last year the first section of the Great silk road with a length of 5 thousand kilometers with 33 historical sites on it, became a world heritage site by UNESCO.

Another example. Public avalon Foundation has developed a map-scheme of Kyzylarai. This map is the first of its kind designed specifically for tourists. It was developed as part of the second phase of the project GEF SGP/UNDP project «Ecotourism in Central Kazakhstan: conservation of natural resources protected areas and creation of economic opportunities in the rural areas». The created map includes a map of the Central part of the mountain

massif (with marked trails, including marked and equipped parks), the plans of Aktogai and Shabanbai Bi, situational scheme of tourist attractions of Kyzylarai, situated both at the reserve and in close proximity thereto and at a certain distance from it (Zheltau mountains, Begazy mountains), as well as some useful for traveler information (transport schedule, useful contacts, useful for orientation on the terrain, the words of the Kazakh language and etc.) (Fig. 2). The card is issued in two language versions: English and Russian. The size unfolded is 29,7×42,2 cm, folded to 10,5×15 cm [9].



Fig. 2. Schematic map of Kyzylarai

Рис. 2. Карта-схема Кызыларай

Public «Avalon» found has developed a schematic map of Ulytau. The pocket-sized edition contains a map of Ulytau mountain range, the plan of the village Ulytau, review the scheme of tourist objects of the region, as well as some useful for traveler information (transport schedule, useful contacts, descriptions and pictures of the most iconic tourist sites).

In creating the map section of the publication was attended by the volunteers of the ASA program from Germany Katja Voigt and Gregor Qualitz.

Map published in three languages: Kazakh, English and Russian. The size unfolded is 29.7 x 42,2 cm, folded to 10.5 x 15 cm. it Should be noted, scheme is listed in the Google Maps system.

Based on the analyzed sites, using geographic information system, we conclude that at this stage of the development of modern Internet and information technologies, GIS is new, but the actual means of obtaining information for the independent traveller. The development and use of GIS technologies in new

information projects will allow users to implement their own activities in different types of tourism.

In conclusion, i would like to note that GIS-technologies are actively used in different countries but in most of the studied use of technology involves more than the creation of interactive maps with information visualization facilities and other capabilities that are listed in the studied projects. However, while technology has not been as widespread in the world, let's hope for the emergence of new interesting developments in this sphere and modern methods of providing the necessary information.

#### References

1. Ivlieva, N. G. *Create Maps Using GIS Technology: Studies. Allowance*.
2. *FreeLondon* [electronic resource]. URL: <https://www.google.com/maps/d/viewer?mid=zxSKgVHMCJ7U.kGJ6yJ3L5Q4E&msa=0> (date of access: 05.07.2015).
3. *ISICAD. Your Window to the World of CAD* [electronic resource]. URL: [http://isicad.ru/ru/articles.php?article\\_num=15737](http://isicad.ru/ru/articles.php?article_num=15737) (date of access: 05.07.2015).
4. *PublicPharmacy ARIA* [electronic resource]. URL: [http://www.spatialonline.com.au/pharmpub\\_2014to15/default.aspx](http://www.spatialonline.com.au/pharmpub_2014to15/default.aspx) (date of access: 07.06.2015).

5. *Geographic Information Systems and Technologies in Tourism* [electronic resource]. URL: <http://www.uran.donetsk.ua/~masters/2011/igg/pahomova/library/art4/art4.htm> (date of access: 26.07.2015).

6. *Map of Astana* [electronic resource]. URL: <http://maps.astana.kz/ru/gis.html> (date of access: 27.07.2015).

7. Sinatorov, S. V. *Information Technologies in Tourism* [Text]: a tutorial / Sinatorov S. V., O. V. Pikulik, N. V. Bochenin. Moscow: Alfa-M: INFRA-M, 2012. 336 p.

8. *Tourism at the End of 2013* [the official site of akim of Almaty region]. URL: <http://zhetyysu-gov.kz> (date of access: 12.09.2015).

9. *The Final Report on the Project «Ecotourism in Central Kazakhstan: Conservation of Natural Resources, Protected Areas and the Creation of Economic Opportunities for Rural Areas (Second Phase)»*. The person responsible for the preparation and submission of the final report: Vitaliy Shuptar, President of PF «Avalon», 2014. 20 p.

#### Reviewer

**Matayeva B.T.**, PhD in Economics, Associate Professor of the Chair of Tourism and Restaurant Business Karaganda Economic University of Kazpotreboysuz